

# BUILDING THE NEXT-GENERATION X-RAY LIGHT SOURCE

## *Advanced Photon Source Upgrade Project*

**Upon completion of the upgrade, the Advanced Photon Source (APS), a U.S. Department of Energy Office of Science User Facility at Argonne National Laboratory, will be a global leader among the next generation of storage-ring based X-ray light sources.**

The APS Upgrade will allow researchers to see things at scales they've never seen before with storage-ring based X-rays. The extreme level of detail will open new frontiers and lead to breakthroughs in basic science which will help solve pressing problems across a wide range of scientific industries.

### RESEARCH PRIORITIES

Future pivotal discoveries and scientific opportunities enabled by the APS Upgrade will be endless and may include:



Converting sunlight into energy and storing it using revolutionary systems



Developing cleaner, more efficient biofuels



Detailing mechanisms by which pollutants move through soil



Transforming our understanding of the structure of the Earth's core



Developing new drugs to treat infections resistant to today's antibiotics



Improving our understanding of how the brain processes and stores information using neurons

### CONTACT

**Beth Schlesinger**

Communications and Public Affairs  
Head of Photon Sciences Communications  
Phone: 630-252-5325  
Email: bschlesinger@anl.gov

### DID YOU KNOW?

- Once complete, the upgraded APS will be the nation's brightest high-energy, storage-ring based X-ray source delivering X-ray beams that will be up to **500 times brighter** than today's light source.
- Today's X-ray beams produced at the APS are **one billion times brighter** than the X-rays produced in a typical dentist's office.
- Accelerated electrons move through the 1.1-kilometer X-ray storage ring at nearly the **speed of light**.
- Every year, more than **5,500 researchers** from almost every U.S. state, Washington, D.C., and countries around the world conduct experiments at the APS.
- The APS is a prolific source of scientific output, it's users contributing to more than **24,000 peer-reviewed journals** since operations began in 1996.
- **\$815 million** is being invested to upgrade the APS.